Letters to the Editor

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Effects of obesity on mortality in patients with unstable angina or non-ST-elevation myocardial infarction

In a recent article, Buettner *et al.*[1] proposed that obesity is associated with improved outcome in coronary artery disease patients after early revascularization because of UA/NSTEMI over a mean follow-up time of 17 months. The data presented in the first figure suggest that severity of obesity is inversely related to cumulative 3-year cardiovascular mortality. Although one would wish that—in addition to its known deleterious metabolic effects and the accelerated development of atherosclerosis[2,3]—obesity may have cardiovascular benefits, the data and conclusions presented by Buettner *et al.* should be interpreted with great caution. Comparing the baseline data of normal weight patients ($n = 551$) with those of severely obese patients ($n = 48$) presented by Buettner *et al.*,[1] in the former group, there were three times as many patients with prior myocardial infarction (37 vs. 13%), three times as many who had undergone coronary artery bypass surgery (12 vs. 4%), and almost five times as many with a systolic left ventricular ejection fraction of less than 40% (19 vs. 4%). With regard to medical therapy, obese patients more often received renin–angiotensin system inhibitor (64 vs. 51%) or statin therapy (70 vs. 57%). It should also be noted that although there were twice as many diabetics among the severely obese patients (31 vs. 17%), only 6% of these patients received oral anti-diabetic therapy and none of them was treated with insulin. Finally, data on weight development and physical activity during follow-up are not available.

We find it difficult to follow the conclusion put forward by the authors. It is highly likely that the reported improvement in outcome is due to the better overall cardiovascular status, treatment, or changes in lifestyle of obese patients. Indeed, previous myocardial infarction, poor systolic left ventricular function, and extensive atherosclerotic coronary artery disease are associated with poor outcome,[4] whereas the renin–angiotensin system inhibitor or statin therapy improves survival in patients with coronary artery disease.[4] Similarly, weight loss and/or exercise are known to improve cardiovascular function and mortality.[5] In view of the known deleterious effects of obesity and its associated conditions hypertension, insulin resistance, diabetes, and dyslipidaemia[3] and given that its prevalence goes much under-diagnosed in European countries,[6] it appears daring to propose a beneficial effect of obesity according to the conclusions of Buettner *et al.* We also believe that early recognition and prevention of obesity, particularly in young patients,[2,3,7] remain an important therapeutic goal in cardiovascular medicine, which appears to be underachieved at present.

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Matthias Barton
Department of Internal Medicine
University Hospital Zurich
Ramistrasse 100
Zurich 8091
Switzerland
Tel: +41 442555663
Fax: +41 442558747
E-mail address: barton@usz.ch

Marc J. Husmann
Cardiovascular Department
Division of Angiology
University Hospital Berne
Berne 3010
Switzerland

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We fully agree with Drs Barton and Husmann that findings from observational studies like ours should be interpreted with caution. In addition, it is important to emphasize that observational studies document associations and are hypotheses generating, but can hardly ever prove causality. However, we disagree with some other points. (i) It was the primary aim of our study to compare the outcome of obese and normal weight patients. Even after adjustment for all possible confounders in the multivariable analysis, obesity was associated with a 50% reduction in mortality.[1] In their letter, Drs Barton and Husmann focus very much on baseline characteristics in the very obese patients. Obviously, the subgroup of very obese patients in our cohort is too small to allow meaningful statistical analysis or definite conclusions. Because of a more linear correlation between body mass index (BMI) and mortality in our cohort when compared with a U-shaped correlation in other studies, comparison of all obese patients vs. normal BMI patients seemed to be justified in our analysis.[1,2]

(ii) Drs Barton and Husmann find it 'daring to propose a beneficial effect of obesity'. We consider it our scientific obligation to report and discuss findings as open and unbiased as possible. The 'obesity paradox' is well described also for heart failure. Increased BMI is associated with an increase in heart failure.[3] However, after contemporary treatment of symptomatic heart failure, the adjusted mortality risk for patients with lower BMI categories is in the range of 1.2–1.7 when compared with patients with BMI between 30 and 34.9.[4] Some of the most important advances in medicine have been the result of unbiased and thoughtful evaluation of findings that at first sight questioned prevailing dogmas.[5]

Importantly, our finding of an improved outcome for obese patients after unstable angina/non-ST-elevation myocardial infarction treated with early revascularization should not be misinterpreted. Weight loss reduces the risk for diabetes and